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ABSTRACT

Guidelines are offered to ensure a stimulating and challenging learning environment for gifted learners. Curriculum modifications are suggested in the areas of: (1) content (complexity, abstractness, and variety; organization; purpose and choice; interaction with peers; focus on issues, themes, or questions; and role of methodologist, technologist, and communicator); (2) process (study skills, research skills, thinking skills, creativity skills, and communication skills); (3) product (teacher's role, variety of products, quality products, and student involvement); and (4) environment (the teacher and the classroom). An appendix briefly outlines considerations for curriculum approaches, administrative options, and support services and resources required for program development. Another appendix lists eight recommended guides for curriculum development, 12 catalogs, and over 40 suggested materials for classroom use. (17 references) (JDD)

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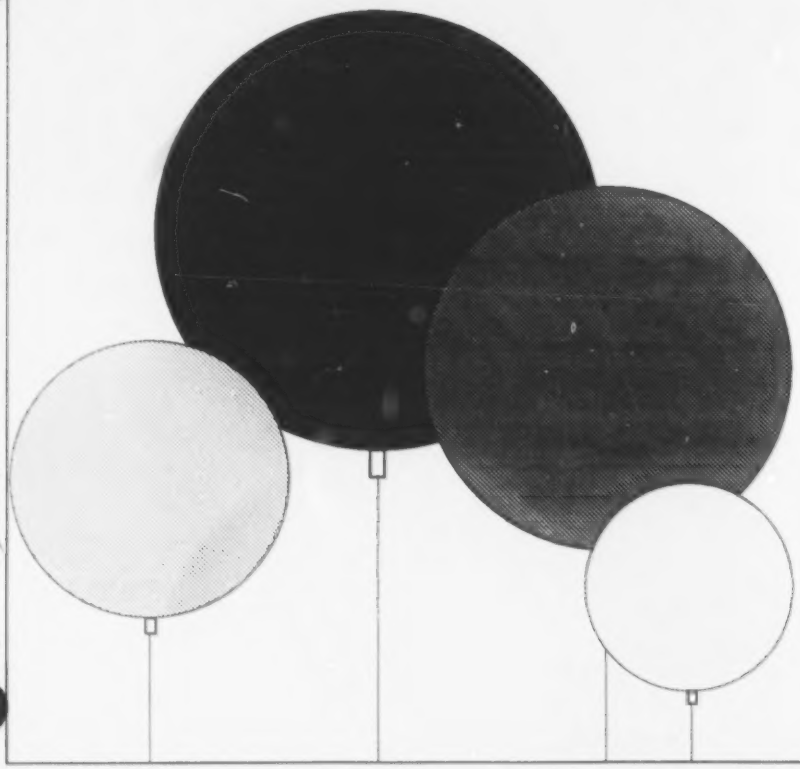
MODIFYING CURRICULUM AND INSTRUCTION

Suggestions for Modifying the Instructional Program to Meet the Requirements of OAR 581-22-403

July 1990



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MODIFYING CURRICULUM AND INSTRUCTION

Suggestions for Modifying the Instructional Program to Meet the Requirements of OAR 581-22-403

Technical Assistance Paper 4

Part of a Series on OAR 581-22-403 and Related Oregon Laws and Rules

Revised July 1990

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INTRODUCTION

The gifted learner may exhibit the following behavioral characteristics:

1. A rich memory storehouse
2. Intense curiosity
3. Reflectivity
4. Openness to experiences
5. Ability to see relationships, to generalize, and to abstract
6. Ease and speed of problem solving
7. Intense, early interests and the energy and perseverance to pursue them

Students may not have opportunities to utilize these characteristics within the regular program unless modifications are made. The goal is to ensure a stimulating and challenging learning environment throughout the school day. Understanding ways to provide this environment is the key to successfully meeting the educational needs of these students (Clark, 1988; Maker, 1982; Kaplan, 1974, 1986; Passow, 1981; and VanTassel-Baska, 1988). When developing programs and services, June Maker in Curriculum Development for the Gifted, suggests modifying the following areas to improve education for talented and gifted students.

Content
Process
Product
Environment

CONTENT MODIFICATIONS

1. Complexity, Abstractness, and Variety

Content of the curriculum should be modified to meet the needs of intellectually gifted and academically talented students. Often, such modifications benefit the whole class as well. Material for the gifted should be more complex, abstract, and varied. Teachers must accept the gifted child's readiness to move beyond age peers in seeking a more stimulating curriculum.

> **Example**: Instead of the social studies text as the main source for information about the American Colonies, students could use books about each colony, as well as studying letters, documents or other related sources.

2. Organization

Because gifted students are capable of seeing relationships between and among parts, curriculum for the gifted should be sequential, articulated from one level to another, balanced with a variety of offerings, and structured as wholes, not fragments. Curriculum should focus on interdependence of subject matter, rather than on skills and facts in isolation.

> **Example:** When teaching outlining or webbing in language arts, Venn diagrams in math, and classification in science, interrelate these topics through a theme of similarities and differences.

Curriculum should be organized economically, emphasizing teaching of key concepts and principles rather than facts, since information is changing and expanding so rapidly. What was once accepted as fact is often changed as new evidence is collected. Gifted students need to develop research skills to access information as it evolves.

> **Example:** Plate tectonics have replaced discussions of diastrophism, dinosaurs may not have been cold blooded, and nuclear fusion may be induced at room temperature.

The focus of instruction should be on key ideas related to how a body of information is organized, the important questions and issues raised in a subject, and the way research is carried out.

> **Example:** Students might be asked to assume the role of economist, sociologist, or historian when considering developing nations, instead of doing the required memorization of the banana exports of Central America.

3. Purpose and Choice

Both teacher and student should have clearly understood purposes for pursuing particular topics. If students are to become task-committed, they must have a purpose for learning. Teachers need to provide experiences that encourage freedom of choice, employ discovery, are open-ended and elicit evidence of reasoning. Gifted students need to have decision-making opportunities in their education. Learning experiences should allow for individual interests, needs, learning styles and abilities. The teacher must have a long-range purpose in curriculum activities. Preparing students for Friday's test is not sufficient reason. How this material will affect the child a year from now or longer should be the question.

Example: The student can select the topic for the report on life in colonial America and should be able to choose the form in which to share this report with the class. The teacher should facilitate and encourage the student to work independently.

4. Interaction With Peers

Gifted students should have the opportunity to interact with peers who are like them by interest or ability for at least part of their school time. Gifted students too often feel isolated and different, leading to development of low self esteem. They should also learn to value the gifts in all individuals through interaction with those with different interests and abilities. Learning to work well with others should be a curricular goal.

Example: Paired problem solving, cooperative learning experiences, interest grouping, ability grouping, peer tutoring, and helping younger or handicapped students are useful strategies. Tutoring raises one caution: It is fine for gifted students to tutor others as long as they want to do so and as long as they are also given opportunities to work at their own level.

5. Focus on Issues, Themes, or Questions

Curriculum for gifted students should provide opportunities to work on unresolved issues, open-ended questions, and areas in which problems exist. This allows students to think productively and explore real world problems involving both cognitive and affective skills. They should study the future and think creatively about ways to make the world a better place for all, developing values, skills as citizens and commitment to society. They should have opportunities to reconceptualize present knowledge in new forms and chances to explore ideas from different points of view.

Example: Ask students to try to understand the Arab-Israeli conflict from the point of view of both the Israelis and the Palestinians and have them think about possible ways to resolve the conflict.

6. Role of Methodologist, Technologist and Communicator

Having students take on the roles of methodologist, technologist, and communicator is a way to ensure a purposeful, organized, epistemological approach that is theme-, question-, or problem-based.

* **Methodologist** - understands the way a body of knowledge is built; best understood in the sciences and social sciences

* **Technologist** - understands and uses tools; can be taught in math, computer science, art, industrial arts, graphics, video production, or photography

* **Communicator** - shares what is learned or felt through English and language arts, foreign language, music, dance, theater, and art

These roles can be integrated around interdisciplinary themes.

> **Example:** At the middle school level, a culture fair in which each child portrays his or her heritage could involve learning the methods of historical and geographical research; the technology of use of a ruler in mathematics, photography, graphics, and use of the computer to make an attractive display; and effective communication skills to express findings verbally and artistically.

LEARNING PROCESS MODIFICATIONS

Information in the world is expanding so rapidly, that it is essential students acquire tools for life-long learning. Although all students should be exposed to these skills, there is a difference in both the progress and the end point in what the student will attain. These important skills include:

* **Study skills** for making good use of time, planning, organization and responsibility

* **Research skills** for accessing information

* **Thinking skills** for processing it

* **Creativity skills** for adapting, modifying, or transforming it

* **Communication skills** for sharing it

A discussion of each of these skills follow.

1. **Study Skills**

   Students need help to develop good study skills such as:

   * Planning
   * Time management/scheduling
   * Study habits
   * Organization
   * Keeping notebooks and journals
   * Responsibility

2. Research Skills

Gifted students need research skills in order to access and manipulate information. They need to collect data directly from subjects or objects, from books, from displays of data such as charts and maps, and through such tools as film and computers. Research skills for the gifted include the following:

* **Advanced library skills:** Use of periodicals, newspapers, computer and databases, and other sources such as questionnaires, interviews, government documents, materials gathered from industry or commerce.

  Example: Use Reader's Guide to determine U.S. concerns with world hunger based on the number of articles written per year over the last 20 years.

* **Data interpretation:** Use of graphs, charts, maps, tables, simple statistics, and research design.

  Example: Construct a graph to demonstrate changes in concerns with world hunger over a period of 20 years.

* **Reporting skills:** Use of spatial learning strategies such as webs or concept maps as well as outlines and note cards to structure research, note-taking, and referencing.

  Example: Make an outline from questions about molds by converting them to statements and putting them in logical order to structure research.

* **Scientific methodology:** Skill in raising questions and using tools for investigation (observing, inferring, comparing, classifying, measuring, predicting, hypothesizing, controlling variables, and experimenting).

  Example: Design an experiment to determine the types of foods on which molds grow.

* **Technology:** Use of photography, video production, and computers.

  Example: Make a slide tape of the growth of molds on different types of foods.

* **Inquiry:** Posing of questions and problems as well as trying to find answers to problems

  Example: Ask students to list all the questions they can think of related to molds.

3. Higher Order Thinking Skills

Gifted students are characterized by their ability to absorb, generalize, organize, transform, and apply abstract concepts — all higher levels of thinking. Asking students to simply demonstrate memory or comprehension is not sufficiently challenging. Teachers can employ questioning strategies that stretch the thinking processes of individuals, small groups, or the entire class through:

* **Analyzing information:** Breaking information into component parts.

  Example: Solving a complex geometry problem.

* **Thinking convergently:** Bringing information together to provide a complete answer on a closed-ended topic.

  Example: "What were the causes for World War II?"

* **Synthesizing information:** Organizing, abstracting and adding elements not inherent in the data.

  Example: Creating a landscape design for the school yard and explaining the choice of plants, forms and spaces.

* **Thinking divergently:** Considering other or all possibilities in an open-ended topic.

  Example: "What would happen if...?" or "How many other ways can...?"

* **Evaluating information:** Establishing criteria and making judgments.

  Example: Considering what criteria should be used to determine social class distinctions, or "How can we judge the quality of this art project?"

* **Making inferences:** Making an educated guess about what is occurring from observations.

  Example: "I think X is occurring because of Y." I think it is going to rain because there are big cumulus clouds in the sky and the wind is changing direction."

* **Making generalizations:** Using particulars to find a pattern and build a rule that fits all.

Example: Studying the lives of several leaders (Ghandi, Hitler, Kennedy, and Lincoln) to make a generalization about the nature of leadership.

* **Making decisions:** Using the facts and weighing the evidence to select an object, strategy, or action.

  Example: Deciding how to use the funds collected through the newspaper drive.

* **Using metacognition:** Having an awareness of how one thinks to monitor, plan, and control activities and thoughts.

  Example: Helping a student to monitor own pacing during a timed test, plan strategies for finding information for a report, or control which type of thinking process is selected for solving a particular problem.

* **Using various languages of thought:** Using verbal, symbolic, figural, bodily-kinesthetic, and emotional modes of thought to comprehend something, remember it, or synthesize information.

  Example: Understanding that multiplying fractions requires switching from a symbolic mode (the numbers) to a figural (picture) or semantic (verbal) mode, as fractions when multiplied yield a smaller number rather than the larger number students anticipate.

4. **Creativity**

In order to develop flexible approaches, generate new information, and improve ideas or products, creative thinking skills are needed. Attitudes of curiosity, openness, risk-taking, and perspective-taking are important to cultivate. A sense of purpose and of what the final product will be is a characteristic of creative individuals. When a child is intensely engaged in a project, it is helpful if time limits can be flexible and the child's efforts supported. Helping students find systematic ways to solve problems is also useful. Teachers should help students develop aesthetic appreciation of the world around them in order to be open to creative possibilities. Ethical issues also are important. Creativity without ethics could lead to such developments as nuclear catastrophes, genocide, or destruction of the planet. Some components of creativity follow:

* **Fluency:** Generating many ideas.

  Example: Listing all the words students can think of that they associate with "snow."

* **Flexibility:** Changing categories.

  Example: Grouping their lists of responses to "snow" into different categories or classes and recognizing that the same word might fit into several categories.

* **Originality:** Differing from the standard answers.

  Example: Comparing their lists to others in the class. Each student discovers which words were chosen by him or her alone.

* **Elaboration:** Modifying for improvement.

  Example: Making poems about snow, considering senses, feelings, and images, or cutting a very intricate snowflake from folded paper.

* **Curiosity:** Inquiring and attempting to discover relationships.

  Example: Wondering whether all snowflakes really are different.

5. **Communication Skills**

Teachers can assist gifted students in developing their communication skills in order to share their ideas and information through activities such as the following:

* **Writing:** Stories, essays, poetry, journals, books, letters for information or opinion, taking dictation from younger students, or writing at the end of a class to assist in thinking.

  Example: Weekly writing themes relating to on-going curriculum. When the class is studying the American Revolution, the writing theme might be, "A Revolutionary Diary."

* **Other ideas:** Photography, tapes, radio and TV production, theater, art, dance, body language, or foreign languages.

  Example: Students might make a daily 5 minute radio news program to be broadcast to the entire school.

PRODUCT MODIFICATIONS

Programs for the gifted should be product-oriented because development of products involves planning, conceptualizing an end point, and working towards a goal. Students who often are accustomed to success with very little effort or who have many diverse interests may fail to gain the satisfaction that comes from reaching closure. Products also serve as an important basis for evaluation of student progress.

1. Teacher's Role

The teacher's role is finding legitimate outlets for students' works, suggesting interesting and unusual formats, providing materials and supplies, suggesting "how to do it" books that assist students in doing their projects, and monitoring student activities throughout the development of a product. Assisting students in product development need not place undue demands on the teacher.

> **Example**: A gifted student can be directed to work with creative ideas by publishing an article in the school newspaper or a national periodical. If the class is studying communication, the student could do a class survey and report on whether television or radio produces greater recall.

2. Variety of Products

Any assignment should result in useful products, not just a churning out of repetitive information. Products should be shared with others interested in them, not necessarily the whole class. This means that appropriate outlets must be found for sharing them. A variety of choices should be offered. Instead of the same old book report, for example, product choices could involve:

* Mini books (1 1/2" x 3")
* Characterizations (An evening event in character)
* Diorama
* Additional chapter to the book
* Transformation of book to play form
* Alternative ending
* Video of the author's process (student-portrayed)
* Story boarding of sequence

3. Quality Product

When a product is to be shared, it should represent the child's best efforts by being neat, well-organized, and free of errors, with an attractive format (pictures, charts, tables, or photos).

4. Student Involvement

If at all possible, students should be encouraged to select the product format they will produce. Skills that help students become self-directed are a focal point of gifted education. Time management, developing learning contracts, and negotiating exemplify skills essential in both development of a product and autonomy.

LEARNING ENVIRONMENT MODIFICATIONS

1. The Teacher

The success of good instruction for the gifted relies on the quality of the teacher whose chief role is that of facilitator. A good teacher:

* Organizes resources for students
* Provides exposure to new ideas and opportunities for exploration
* Is sensitive to students' interests and questions
* Stretches, not stresses the students
* Utilizes negotiation and contracts with students
* Encourages inquiry
* Is an advocate for students
* Empowers students

2. The Classroom

The classroom environment is very important. It is easiest to work with gifted students in noncompetitive, individualized, open settings where they are able to advance at their own rate of learning. A variety of interesting and complex materials and options for activities should be available. Students should find it safe to take risks, make errors or even fail. The classroom is not limited to the four walls - rather, students can move into the community or other parts of the school, and community members can bring exciting ideas to students. A good classroom is interactive with students having opportunities to share ideas with peers. Space is organized for flexibility, storage of students' work, and access to a wide variety of materials.

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PROGRAMS AND SERVICES
TALENTED AND GIFTED STUDENTS

INSTRUCTIONAL OPTIONS

CONTENT	K	1	2	3	4	5	6	7	8	9	10	11	12
Art/Music													
Math													
Social Studies													
Science													
Language Arts													
Fine/Applied													
Phy Educ/Health													
Counsel/Guid.													

Decisions for each cell of the plan matrix

1: Curriculum approaches for the essential learning skills and common curriculum goals, and subject matter areas.

What are the curriculum choices for students across the grades, skill and subject matter areas?

2: Administrative options for delivering curriculum and instruction.

How will the curriculum and instruction be organized?

3: Support services and resources required.

What resources and services are needed to accomplish the instruction?

1: Curriculum approaches – essential learning skills, common curriculum goals and subject matter areas.

A: Increase sophistication of the content and/or application of skills (requires modifications to the planned course statements/common curriculum goals statements or new statements)

B: Maintain current course of study and increase the pace of instruction (does not require modifications to planned course statement/common curriculum goals)

2: Administrative options for delivering instruction, for example:

A: "mainstream" or regular classroom instruction

B: cluster grouping

C: resource room program

D: community-based instruction, vocational placements

E: tutorials, reading and conference, independent study

F: IEPs

3: Support services and resources necessary to implement the curriculum approaches and administrative options for delivering programs and services.

A: Instructional assistance may include:

- resource or consultant teachers assisting the regular classroom programs
- teacher aides
- tutors, mentors, internship supervisors

B: Student assistance may include:

- transportation
- tuition, fees, participant costs

C: Resources may include:

- out-of-grade textbooks, workbooks, materials
- supplemental materials
- access to equipment, labs, libraries

CURRICULUM MATERIALS

Many materials exist today that may be used to differentiate the curriculum for gifted students. One quite comprehensive source for these resources is available from Allyn and Bacon Publishers and is entitled, *Handbook of Instructional Resources and References for Teaching the Gifted,* by Frances Karnes and Emily Collins. Categories in which materials are organized include: level, cost, skills, format, and components (kit, worksheets, simulation, etc.). This would be an important guide for new programs, as well as those already ongoing.

The following lists include some of the more popular materials. The items below were selected with regular classroom teachers in mind, although they also may be used in pull-out programs and other models.

RECOMMENDED GUIDES FOR CURRICULUM DEVELOPMENT:

Appropriate Curriculum for the Gifted, Joyce Van Tassel-Baska, Northwest Clearinghouse for Gifted Education, Seattle, WA.

Blending Gifted Education With the Total School Program, Donald Treffinger, D.O.K. Publishers, PO Box 605, East Aurora, NY 14052.

Curriculum Development for the Gifted, C. June Maker, Aspen Publishers, Inc., Rockville, MD, 1982.

Gifted Children in the Regular Classroom: The Complete Guide for Teachers and Administrators, Kathryn T. Hegeman, Trillium Press, Box 921, Madison Square Station, New York, NY 10159; 1-212-684-7399.

Gifted Students in Regular Classrooms, Beverly Parke, Allyn and Bacon Publishers,1989.

Individualized Teaching of Gifted Children in Regular Classrooms, Hazel Feldhusen, D.O.K. Publishers.

The School-Wide Enrichment Model: A Comprehensive Plan for Educational Excellence, Joseph Renzulli, Sally M. Reis; Creative Learning Press, PO Box 320, Mansfield, CN 06250.

Teachers Make the Difference, Susan Kovalik and Assoc., PO Box 20455, Village of Oak Creek, AZ 86341.

CATALOGS:

Creative Learning Press, Box 320, Mansfield Center, CT 06250.

Creative Publications, 5040 W. 111th St., Oaklawn, IL 60433-9941, 1-800-624-0822.

Cuisenaire Co. of America, Inc., 12 Church St., Box D, New Rochelle, NY 10802, 1-800-237-3142.

Dale Seymour Publications, PO Box 19888, Palo Alto, CA 94303, 1-800-USA-1100.

D.O.K. Publishers, PO Box 605, East Aurora, NY 14052, 1-800-458-7900.

Good Apple, PO Box 299, 1204 Buchanan St., Carthage, IL 62321-0299, 1-800-435-7234.

Interact, PO Box 997-Y89, Lakeside, CA 92040, 1-619-448-1474.

NL Assoc., Inc., PO Box 1199, Hightstown, NJ 08520.

Northwest Clearinghouse for Gifted Education, ESD 121, 1410 S. 200th St., Seattle, WA 98198, 1-206-4961.

Teachers and Writers Collaborative, 5 Union Square W., New York, NY 10003, 1-212-691-6590.

Trillium Press, PO Box 209, Monroe, NY 10950, 1-914-783-2999.

Zephyr Press, 430 S. Essex Lane, Tucson, AZ 85711, 1-602-745-9199.

SUGGESTED MATERIALS FOR CLASSROOM USE:
(Special thanks to Jackie Buisman for permission to use her bibliography.)

Creative Publications:

The Good Time Math Event Book, grades 2-5, math

Line Designs, Creative Constructions, grades 2-8, math

Math manipulatives for very young children

Pentominoes and activity books, grades 2-6, math

Problem-Mathics: Mathematical Challenge Problems With Solution Strategies, grades 7-12, math

Dale Seymour:

Aftermath I-IV, grades 2-8, math ("math" also indicates problem-solving and some critical thinking)

Family Math, grades K-6

Favorite Problems, grades 1-5, math

Hug a Tree, grades K-2, science

The I Hate Mathematics! Book, grades 2-6, math

Introduction to Tessellations and other books on tessellations, like *The World of M.C. Escher*, grades 4-8, math

NewsSchool: Using the Newspaper to Teach Language Arts, grades 3-9, language arts

NewsSchool: Using the Newspaper to Teach Math, Science, Health, grades 3-9, math, science, health

NewsSchool: Using the Newspaper to Teach Social Studies, grades 3-9, social studies

Pattern blocks with activity books, grades K-5, math

Problem-Solving in Mathematics, grades 1-8, math

Tangrams with puzzles books, grades K-5, math

Techniques of Problem-Solving, grades 1-12, math

Dandy Lion Publications (PO Box 190, San Luis Obispo, CA 93406):

Primarily Logic, grades 1-3, thinking skills

Primarily Problem-Solving, grades 1-3, social studies, problem-solving

Primarily Research, grades 1-3, social studies, research

Good Apple:

Creativity for Kids Through Vocabulary Development, Through Word Play, Through Word Analysis, grades 1-4, language arts

Lateral Thinking, Creativity Step-by-Step, grades 1-12, language arts, creative thinking

Mighty Myth, grades 3-8, language arts

Mindglow, grades 2-12, language arts, creative thinking

The Other Side of Reading, grades 1-6, language arts

Scamper: Games for Imagination Development, grades 1-8, language arts, creativity.

Sunflowering: Thinking, Feeling, Doing Activities for Creative Expression, grades 1-6, creativity

The Unconventional Invention Book, grades 2-8, creative thinking, science

Wonderful Word Games, grades 3-6, language arts

NL Assoc., Inc.:

Mind Joggers!, grades 1-9, thinking skills

Science and Math Enrichment, grades 1-3, science, math

The Science Book, grades 2-6, science

Stories With Holes, grades 2-12, thinking skills, logic

Northwest Clearinghouse for Gifted Education:

A Literature-Based Reading Program, grades 3-6, language arts

"Bugged" By Entomology, grades 1-5, science

Hilda's Revenge, grades 4-12, group problem-solving, thinking skills

Predictions, Observations, and Conclusions: Science Activities for Gifted Primary Children, grades 1-3, science

To the Bottom of the Sea, grades 1-5, science

Zephyr Press:

A Mathematical Mystery Tour: Higher Thinking Math Tasks, grades 5-12, math

Chrysalis: Nurturing Creative and Independent Thought in Children, grades 4-12, creativity, language arts, critical thinking, arts

Creative Conflict Resolution: More Than 200 Activities for Keeping Peace in the Classroom, grades K-6, problem-solving, social studies

Inventors Workshop, grades 3-8, science, thinking skills

M.A.G.I.C. K.I.T.S.: Meaningful Activities for the Gifted in the Classroom through Knowledge, Interest, Training, and Simulation, grades 3-7, all subjects, independent study

Search: A Research Guide for Science Fairs and Independent Study, grades 4-8, science, independent study